

**WHAT IS CLAIMED IS:**

1. A vortex flow sensor for measuring a fluid flowing in a pipe, particularly for measuring a flow velocity, a volumetric flow rate, and/or a mass flow rate of the fluid, the vortex flow sensor comprising:

a flow tube connected into the pipe for conducting the flowing fluid;

a bluff body disposed in the lumen of the flow tube and serving to shed Kármán vortices; and

a vortex sensor device responsive to pressure fluctuations caused by the vortices, said vortex sensor device including a sensor vane extending into the flowing fluid downstream of the bluff body and being moved, particularly repeatedly, by the vortices, and at least one sensing element mechanically coupled to the sensor vane and responsive to motions of the sensor vane;

wherein the vortex flow sensor further comprises a first temperature sensor and at least a second temperature sensor for sensing temperatures in the flowing fluid, said first and second temperature sensors being disposed within the sensor vane and being fitted therein in such a way as not to be wetted in operation by the flowing fluid.

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2. A vortex flow sensor as set forth in claim 1 wherein the sensor vane has at least one blind hole in which at least one of the two temperature sensors is fitted.

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3. A vortex flow sensor as set forth in claim 2 wherein the first and second temperature sensors are fitted in the at least one blind hole.

4. A vortex flow sensor as set forth in claim 1 wherein the first and second temperature sensors are spaced from each other.

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5. Use of a vortex flow sensor as set forth in claim 1 for measuring flowing vapor.

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6. A vortex flow sensor for measuring a fluid flowing in a pipe, particularly for measuring a flow velocity, a volumetric flow rate, and/or a mass flow rate of the fluid, the vortex flow sensor comprising:

15 a flow tube connected into the pipe for conducting the flowing fluid;

a bluff body disposed in the lumen of the flow tube and serving to shed Kármán vortices; and

20 a vortex sensor device responsive to pressure fluctuations caused by the vortices, said vortex sensor device including a sensor vane extending into the flowing fluid downstream of the bluff body and being moved, particularly repeatedly, by the vortices, and at least one sensing element mechanically coupled to the sensor vane and responsive to motions of the  
25 sensor vane;

wherein the vortex flow sensor further comprises a first temperature sensor and at least a second temperature sensor for sensing temperatures in the flowing fluid, said first and second temperature  
30 sensors being disposed within the bluff body and being fitted therein in such a way as not to be wetted in operation by the flowing fluid.

7. A vortex flow sensor as set forth in claim 6 wherein the bluff body has at least one blind hole in which at least one of the two temperature sensor is fitted.

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8. A vortex flow sensor as set forth in claim 7 wherein the first and second temperature sensors are fitted in the at least one blind hole.

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9. A vortex flow sensor as set forth in claim 6 wherein the first and second temperature sensors are spaced from each other.

15 10. Use of a vortex flow sensor as set forth in claim 6 for measuring flowing vapor.